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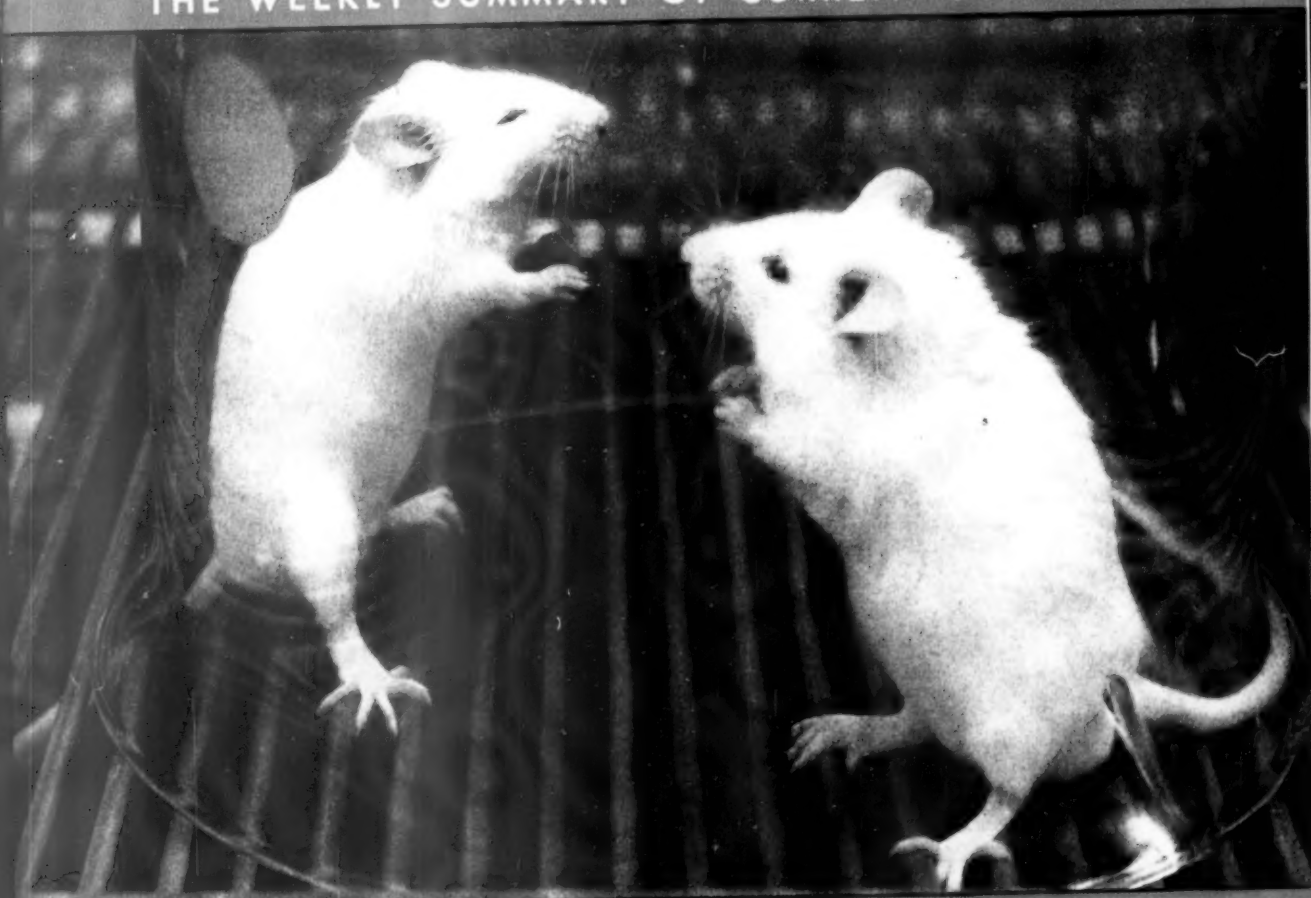
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VOL. 73 NO. 17 PAGES 257-272

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



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CHEMISTRY

Make Body Hormone

Beginning with a coal tar product, chemists have been able to synthesize a few crystals of aldosterone, a hormone important in maintaining the body's salt balance.

► THE VITAL HORMONE that controls the salt balance of the body has been prepared directly from coal tar products. The accomplishment could make aldosterone more readily available for the treatment of human disease, such as the dreaded Addison's disease.

The chemists who reported their synthesis of the hormone to the American Chemical Society meeting in San Francisco said it still is too early to do more than speculate on what significance their work will hold for physicians.

They pointed out, however, that aldosterone can be extracted from adrenal glands only in very small amounts, and the only practical way to obtain it in quantities large enough for wide medical study is through synthesis.

In comparison with the artificial adrenal hormone desoxycorticosterone acetate, or DOCA, aldosterone is extremely active. Biological, physical and chemical tests have shown it has 30 times as much salt-retention potency as DOCA.

Before the synthetic aldosterone can be made available for routine salt level control in humans, it must first be produced in quantities large enough for testing chem-

ically, and in animal and hospital experiments, Dr. William S. Johnson of the University of Wisconsin said.

Dr. Johnson headed a research team consisting of Drs. Joseph C. Collins, Raphael Pappo and Mordecai B. Rubin, also of the University.

The salt-retaining aldosterone first was totally synthesized in 1955 by Dr. Arthur Wettstein and a team of Ciba Company scientists in Switzerland, Dr. Johnson said.

The synthesis described was the first to be based on a very readily available coal tar chemical, 1,6-dihydroxynaphthalene. That chemical was chosen as a starting point, Dr. Johnson said, because it is very similar in structure to some parts of the aldosterone molecule.

Following the addition of two more compounds plus treatment in some 30 separate chemical reactions, a few crystals of the hormone were obtained.

The yield was only "about equal to the amount of salt from one shake of a salt-cellar," Dr. Johnson said, but it was sufficient for positive identification.

For the total synthesis of the important body chemical, as well as for previous work, Dr. Johnson received the American

Chemical Society \$1,000 award for creative work in synthetic organic chemistry. Earlier, he synthesized the female hormone estrone and performed the first total synthesis of the male sex hormone testosterone.

Science News Letter, April 26, 1958

PUBLIC HEALTH

Diet Can Protect Man From Harmful Isotope

► MAN CAN protect himself from the dangers of radioactive strontium-90 fallout in his food by chemically treating garden soil and by switching his tastes in vegetables.

Treat garden soil with lime and learn to eat more plants that do not readily pick up strontium from the soil. These are the life-saving proposals reported to the American Chemical Society meeting in San Francisco by Dr. Eric B. Fowler, Los Alamos, N. Mex., Scientific Laboratory of the University of California.

Bone cancer-causing strontium-90 from nuclear test fallout may pose a serious threat to man by entering the foods he eats, Dr. Fowler said.

Based on the Los Alamos research, lettuce and alfalfa could be considered "safe" plants, and various grasses would have to be called unsafe for humans and animals with respect to their ability to take up strontium-90.

Strontium is chemically very similar to calcium, which is normally absorbed from the soil by plants. Plants that pick up needed calcium from the soil also will pick up dangerous strontium-90. To reduce the strontium-90 uptake, Dr. Fowler said, it is necessary to make calcium much more available to the plant.

Experiments performed in New Mexico as part of "Project Green Thumb" show that large quantities of calcium, in the form of lime, added to plant-growing soil considerably reduced the strontium-90 uptake of lettuce, alfalfa and grass.

Dr. Fowler suggested the lime be added to soil in the form of limestone, which is nearly half calcium.

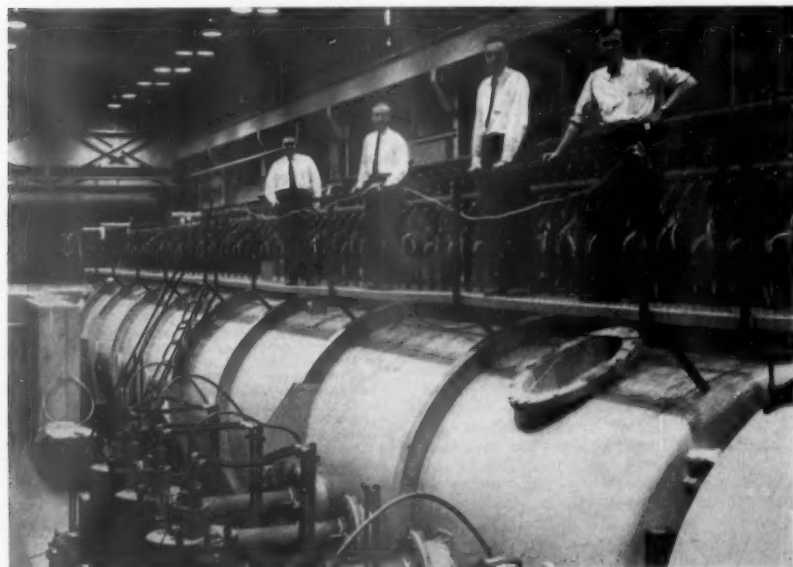
Plants such as lettuce and alfalfa "seemed to prefer calcium to strontium and during their growth acquired less strontium from the soil than would be expected." Other plants, such as grass, preferred strontium and appeared to concentrate strontium as they grew.

The Los Alamos chemists pointed out that other scientists have reported that strontium-90 from radioactive fallout concentrates in the upper two to four inches of soil and that plants with deep roots absorb only a small amount of radioactivity.

They suggested that "food for humans and cattle obtained from deep-feeding plants may be important sources of nutrient low in strontium."

Co-authors of the report, all of the Los Alamos Laboratory, were Richard G. Thomas, George L. Johnson, Mitchell A. Melnick, Elgin H. Rex, Felix A. Vigil and C. W. Christenson.

Science News Letter, April 26, 1958



ATOM SMASHER—A giant new heavy ion linear accelerator has gone into operation at Yale University. More than three years of work went into the design and construction of the \$1,800,000 accelerator financed by the U. S. Atomic Energy Commission. Standing on the runway are four physicists who worked on the design and development of the accelerator: beginning at the left, Prof. Edward R. Beringer, director of the project, Myron S. Malkin, Carl E. Anderson and Robert L. Gluckstern.

SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

► **Psychologia Animal.**—Medicos al hospital del Universitate Pennsylvania ha inducite asthma in porcos de India per (1) render los allergic a albumine e (2) fortiar los a respirar un nebula de albumine intra un cassa hermeticamente claudite. Le asthma del porcos de India esseva multo simile al asthma de humanos, tanto in su aspecto clinic como etiam in su symptoms roentgenologic e laboratorial. Le plus remarquable observation in iste experimentos esseva que le ataques de asthma continuava occurrer in precisemente le mesme forma quando le animales esseva ponite in le prevemente usate cassas sub exclusion del nebula de albumine.

► **Aviation Militar.**—Le Fortia Aerree del Status Unite ha disveloppate un specie de pasta que es applicate al superficie exterior de aeroplanos con le effecto que illos es rendite practicamente indetegibile per radaroscopios. On crede que le russos possede jam un simile substantia.

► **Immunologia.**—Dr. Marta Vojtiskova del Instituto de Biologia del checoslovac Academia de Scientias ha succedite a reducir le "reactivate immunologic" inter pintadas e gallinas per alimentar e injicer prolongate cursos de doses crescente de sanguine ab individuos de un del duo species a individuos del altere. Le resultado esseva le possibilitate de fertilisation cruce inter le species. In quatro casos un hybrida gallina-pintada ha supervivite usque al maturitate.

► **Recercas de Tuberculose.**—Studies relative al organismo pathogene de tuberculose, nunc in progresso al Universitate California, labora con un virus bacteriophage que destrue le agente causal de tuberculose in vitro sed non in vivo. In vitro le virus se attacha al bacterio e injice in illo su contento de acido nucleic. Isto pare fortiar le bacterio a reproducere le virus si abundantemente que illo (i.e. le bacterio) erumpe e perde omne su virulentia. Le action del virus etiam rende le bacterio plus sensibile al effecto de enzymas e de vibrations sonic. In vivo le bacterio pare esser protegit contra le action del virus per factores in le sero sanguinee e in altere fluidos del corpore.

► **Recercas de Cancere.**—Un gruppo de recercatores britannic ha definitivemente demonstrate que fumo de tabaco "in stato de nascentia" contine grande numeros de radicales libere le quales dispare si tosto que le temperatura del fumo es abbassate. On ha repetitivamente exprimito le suspicion que il es le radicales libere in le fumo de tabaco e non le fumo per se que es le ver agentes cancerogene, sed usque nunc le presentia de radicales libere in fumo de tabaco esseva solmente un supposition.

► **Ostreicultura.**—Dr. J. A. Aboul-Ela del instituto oceanographic del Universitate Cairo ha constatate que forte doses de lumine ultraviolette destrue multes del vermes, bacterios, e fungos que representa un peste costose in quasi omne parcos de ostreicultura. Le ostreas mesme non es afficte per iste tractamento.

► **Mettallurgia.**—Un gruppo de recercatores del Corporation Kennecott Copper ha recipite un patente pro le utilisation de microbios de character metalliphyle in le extraction de cupro ab aquas residuali.

► **Piscicultura.**—Juvene salmones in bassinos de piscicultura suffre adustion solar con quasi le mesme symptoms como humanos, i.e. le formation de vesiculas e le perdita del pelle.

Recercatores del statunitense Servicio de Piscicultura ha constatate que le salmones es hypersensibile al effecto del insolation solmente quando lor dieta es deficient in niacina. Supplementos de niacina protege le salmones contra le adustion solar e mesmo restabili salmones jam adurite.

► **Technologia.**—Le facto que pedunculos de banana es difficile a comburer ha ducite al scoperta que illos contine un mineral a forte virtute ignifuge. Iste mineral, que pare consistere super toto de carbonato de kalium, promitte devenir practicamente importante in le impregnation anti-incendiari de ligno e altere materiales in que un reduction del combustibilitate es frequentemente desirabile.

► **Satellitologia.**—Le varie satellites russe e american nunc in orbita ha sin dubita augmentate le fundo del cognoscentias human in re radios cosmic, micrometeorites in le spatio vicin al terra, le temperatura al margine del atmosfera terrestre, e multe altere themas e problemas. Le russos ha non ancora commenciare publicar lor observations, e il es non ancora cognoscite in qual campo o qual campos illos es le plus importante. In omne caso, informationes de importantia pro le determination plus precise de distancias al superficie del terra non pote esser expectate ab le observation del sputniks e non ab le observation del satellites american, con le sol exception del satellite "Vanguard." Isto es usque nunc le sol satellite completamente spheric, e calcular le retardo del curso de un satellite como effecto del friction—a calculation que es indispensable in le application de observations satellitic a mesuras de distancias al superficie terrestre —es practicamente impossibile in le caso de satellites non-spheric.

► **Psychologia.**—Dr. C. H. Graham e Dr. Yun Hsia del Universitate Columbia reporta le scoperta de un juvene femina con achromatopsia unilateral. Le caso es importante proque hic pro le prime vice on pote obtener ab le mesme subjecto un description de vision normal e de vision achromatic.

► **Ingenieria.**—K. D. Ofer e J. Giladi del Instituto Technologic de Haifa in Israel ha construite un refrigerator que es activate exclusivemente per le energia de un collector de radiation solar.

► **Recercas de Cancere.**—Experimentos al Instituto National de Cancerologia a Bethesda in Maryland ha monstrate que injectiones de medulla ossee in muses ha le dupe effecto (1) de proteger los contra le injurias de irradiation ionisante del corpore total—un constatacion non inexpectate proque de accordo con studios publicate jam plure annos retro—e (2) de promover, in le muses recipiente le injectiones, le disveloppamento de tumores maligne. Experimentos additional monstrava que muses tractate con medulla ossee ab muses de altere racia moriva intra inter 21 e 90 dies, durante que muses tractate con medulla ab donatores del mesme racia habeva un superviventia non multo inferior al superviventia de animales de controllo.

► **Hypnose.**—Le metabolismo de glycogeno in le cerebro de subjectos human e animal differe caracteristicamente inter le stato eveliate e le stato dormiente. In experimentos con rattos, Dr. D. Svorad del checoslovac Academia del Scientias ha trovate que in le respectu mentionate, sonio e hypnose es identic. Le duo resulta probabilemente de un simile inhibition cerebral.

Science News Letter, April 26, 1958

GENERAL SCIENCE

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Science News Letter, April 26, 1958

SCIENCE NEWS LETTER

VOL. 73 APRIL 26, 1958 NO. 17

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PHYSIOLOGY

Artificial Heart Used

A small, electrically driven pump encased in plastic, designed to substitute for the heart permanently, has been successfully tested in laboratory animals.

► A THREE-POUND, electrically driven pump designed to be placed permanently in the body to substitute for the heart was described to the American Society for Artificial Internal Organs meeting in Philadelphia.

Still in its earliest stages of development, the plastic-encased machine represents initial attempts to build a small implantable blood pump that can substitute for cardiac function, Dr. B. J. Kusserow of Yale University told the scientific meeting.

The pump and its tiny alternating current motor fit into a watertight and airtight polyethylene plastic case that measures seven inches in length and two and three-fourths inches in diameter. The internal substitute heart has only a single wire connection leading outside the body. This is a polyethylene tube that is plugged into an ordinary wall outlet to supply electricity to power the motor.

The electro-mechanical pump has been used on experimental animals to substitute for only the right side of the heart to date. When implanted in the animal, it is placed in the abdomen, which Dr. Kusserow described as a "wonderful radiator."

One reason for putting this device into the abdomen is that it does not encroach on the respiratory function, Dr. Kusserow explained.

To date, the longest continuous pumping for the substitute heart in which an animal has been on "his own" has been ten and one-half hours.

The pumping rate of the small machine can be varied from 40 to 180 strokes per minute "simply by changing the voltage," the young medical researcher reported. It delivers from 600 to 650 cubic centimeters of blood per minute, only a small fraction below that of the experimental animal's normal heart pumping action.

The device has a small cup-like lucite pump connected to a diaphragm made of rubber and stainless steel. The pumping action, initiated by the motor, causes the pump to move back and forth. This action oscillates the rubber diaphragm against the rigid steel diaphragm.

Dr. Kusserow cautioned that much more work will have to be done before the pump becomes practical. One of the chief problems encountered is the breakdown of blood elements. Changes were noted, for example, in the plasma and the hemoglobin of the animal after the small pump was implanted in the abdomen.

Science News Letter, April 26, 1958

MEDICINE

Anti-Leukemia Drug Found Effective in Lab

► A DRUG that greatly increases the life span of mice with advanced leukemia has been discovered by National Cancer Institute scientists.

The new synthetic compound has produced a 75% increase in survival time beyond that achieved with methotrexate, a

drug widely used to treat human leukemia, when tested against mouse leukemia.

The drug has not yet been tested against leukemia in humans. It was found during a program of routinely testing the anti-leukemic action of a large number of chemicals by scientists at the National Cancer Institute, National Institutes of Health, Bethesda, Md. They reported its discovery to the American Chemical Society meeting in San Francisco.

The drug was identified as 3',5'-dichloro-amethopterin, a derivative of the drug now in use to fight human leukemia, by Dr. Abraham Goldin, head of the biochemical section of the laboratory of chemical pharmacology.

Mice that normally would live only two or three days after leukemia has spread throughout their bodies can live for more than 50 days when treated with the new drug.

Survival time increases with increasing dosage until a level is reached at which the drug is too toxic, the scientists found.

Co-authors of the report were John M. Venditti, Stewart R. Humphreys, Drs. Louis Shuster and Robert A. Darrow, laboratory of chemical pharmacology, and Nathan Mantel of the biometry branch.

The drug was synthesized by chemists of the American Cyanamid Company, Pearl River, N. Y. Drs. Robert B. Angier and William V. Curran of American Cyanamid reported on the chemistry of the drug at the same meeting.

Dr. Goldin said results of the NIH experiments emphasize the need to study systematically compounds related to chemicals with known medical value. Other compounds related to methotrexate are undergoing similar study.

Science News Letter, April 26, 1958

PSYCHOLOGY

If You Watch too Long You May Miss "Moon"

► THE SKY WATCHER who keeps his eye glued to a telescope looking for one of the earth satellites for an hour may not see it at all when it finally streaks over.

Observing efficiency starts to drop off after only five minutes of continuous watching, a research team of the U. S. Naval Research Laboratory reported to the Eastern Psychological Association meeting in Philadelphia.

After as much as an hour of watching, the "moon," in order to be picked up, would have to be two and a half times as bright as a satellite that could be observed when the sky watchers started their vigil.

The team of scientists includes Drs. W. D. Garvey, Irene S. Gullledge and Jean B. Henson. The sky watchers were eight Navy enlisted men. Conditions of actual moon observing were simulated in the laboratory for this test. The "satellite" was made to appear after six different intervals of observation: 5, 15, 30, 60, 90 and 120 minutes.

Science News Letter, April 26, 1958



JET INTERCEPTOR—The U. S. Air Force's fastest and highest-flying all-weather jet interceptor, the delta-winged F-106B, retracts its landing gear soon after take-off from Edwards Air Force Base, Calif., on its maiden test flight. John M. Fitzpatrick, Convair Division, General Dynamics Corporation, piloted the jet during its 40-minute, supersonic flight.

PUBLIC HEALTH

Plague Spread Traced

Public health scientists are constantly on the alert to protect populations against epidemic diseases. Research has now positively identified the flea as a bubonic plague carrier.

► **BUBONIC PLAGUE**, a disease always found in some animals in western United States, can be spread by infected fleas, it has been demonstrated for the first time under semi-field conditions.

A team of three U. S. Public Health Service scientists and a radiobiologist report in *Science* (April 11) that they were able to trace flea transfer from wild rodents to domestic rats. This, they point out, is a "particularly important problem in plague epidemiology."

By tagging fleas with radioactive cesium-144, the scientists traced the fleas' movements.

Three California voles, *Microtus californicus*, a kind of field mouse, were studied in enclosed plots simulating field conditions. Tagged fleas were placed on some of the animals. They were then found in the animals' nests as well as moving between animals. The fleas were also eaten by the field mice.

While the field mice were alive, the scientists report, no tagged fleas were found on rats which were kept in a separate but nearby enclosure. However, in further experiments fleas moved from dead field mice to live rats and, when new field mice were placed in the area with rats, from live field mice to live rats. Radioactive fleas were also recovered from the rats' nests.

Further studies on flea transfer under actual field conditions are being planned, the scientists report, to confirm and extend their observations.

The bubonic plague is known to be established in at least 15 western states in addition to western Canada and in Mexico.

W. V. Hartwell, S. F. Quan and Dr. L. Kartman of the Communicable Disease

Center, U. S. Public Health Service, San Francisco, and Dr. K. G. Scott of the department of radiology, University of California School of Medicine, San Francisco, reported the research.

Dr. Kartman and Mr. Quan recently reported an unusually large number of meadow voles—"the largest and most extensive yet recorded in North America"—in California and Oregon. The fact that evidence has been found of an epidemic of tularemia in these animals poses a very serious public health problem, they report.

Dead field mice containing millions of tularemia organisms have been found under hay bales, in stored grains, and on the ground. Streams, irrigation ditches and, in one case, a shallow well that supplied drinking water in a home, tested positive for tularemia organisms. Two field mice, found positive for tularemia, were picked up in the pump house at this home.

Humans have been known to contract the disease from dogs and cats that have been infected when hunting the field mice.

Epidemics in man following outbreaks among field mice have occurred sufficiently often, the scientists warn, to illustrate the potential hazard of tularemia outbreaks in field mice.

K. F. Murray of the California State Department of Public Health's bureau of vector control, Berkeley, F. M. Prince of the Communicable Disease Center, U. S. Public Health Service, San Francisco, and M. A. Holmes, Oregon State Board of Health, Portland, co-authored the report on tularemia which appears in *California Vector Views* (April).

Science News Letter, April 26, 1958

The reason for the high vitamin B-12 concentration observed in the leukemia patients is not clearly understood at present, a team of scientists from the National Cancer Institute, Bethesda, Md., reported. Preliminary studies, however, suggest there may be some difference in the way vitamin B-12 is bound to a serum protein in the chronic myelocytic leukemia patient.

In one patient who had a high concentration of vitamin B-12 a clinical remission resulted in a reduction in the concentration to the normal range, Drs. I. Bernard Weinstein, Robert S. Mendelsohn, Helen F. Noble and Donald M. Watkin of the Institute reported.

The grasshopper pigment found by Drs. Landry E. Burgess and D. T. Rolfe of Meharry Medical College, Nashville, Tenn., was fed to weanling rats to determine its effect on growth and pernicious anemia compared to that of vitamin B-12. A close similarity between the grasshopper pigment and the vitamin was found.

Drs. Burgess and Rolfe said that it is "reasonable" to expect similar results with their grasshopper derivative as an "anti-anemic and growth principle" for man.

Science News Letter, April 26, 1958

● RADIO

Saturday, May 3, 1958, 1:30-1:45 p.m., EDT "Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio network. Check your local CBS station.

Dr. Eugene H. Lucas, professor of horticulture, Michigan State University, East Lansing, Mich., will discuss "New Drugs From Plants."

GEOPHYSICS

Satellite Temperatures Yield Earth's Heat

► **TEMPERATURE** information radioed back to earth from man-made satellites is yielding improved estimates of the heating characteristics of the earth and sun.

Dr. Raymond H. Wilson Jr. of the U. S. Naval Research Laboratory's Project Vanguard reports in *Science* (April 11) his calculations showing how the telemetered temperature data can be put to use in this new way.

Only requirement is that the amounts of solar radiation absorbed and emitted by the materials of which the satellite is made are known. These can be determined experimentally before launching.

The predicted satellite temperatures, Dr. Wilson says, depend upon the assumed effective temperature of the sun and on the sunlight reflected from earth. Since the space temperatures are now being measured, these relations can be reversed to give the heat characteristics of earth and sun.

Dr. Wilson told *SCIENCE SERVICE* he expected to complete the reverse calculations as soon as sufficient satellite temperature information was available.

Science News Letter, April 26, 1958

MEDICINE

Aged Lack Vitamin B

► **VITAMIN B** compounds were implicated in aging, pernicious anemia and leukemia at a session of the Federation of American Societies for Experimental Biology meeting in Philadelphia.

Three different research reports showed:

1. A deficiency of vitamin B-6 is common in the aged.

2. Serum vitamin B-12 concentrations have been found to be higher in patients with one type of leukemia than in those with other forms of cancer or in well patients.

3. A new reddish-brown crystalline substance has been isolated from the developing egg of the common grasshopper that can re-

place crystalline vitamin B-12 in the nutrition of young rats.

Tests to measure the amount of vitamin B-6 in the body have shown that individuals 18 to 40 years old had significantly higher levels than those found in elderly men and women 60 to 90 years old, Dr. Elma Ranke of the School of Hygiene and Public Health of Johns Hopkins University, Baltimore, Md., said.

Dr. Ranke reported the vitamin B-6 deficiency in the aged may represent an increased need of it with advancing years. As the individual grows older it is also possible the aged person may find it more difficult to absorb and utilize the vitamin.

PHYSIOLOGY

Brain Research Needed

► A NEW KIND of warfare fought by manipulating the minds of men with chemicals or other means was foreseen as possible by Dr. Leonard Carmichael, Secretary of the Smithsonian Institution, Washington, D. C.

He said it was conceivable that modern research in brain study could lead to "novel techniques" for altering individual behavior. Russia, not the U. S., leads the world in many aspects of brain research, Dr. Carmichael warned.

He urged the free world to do more than it has in the recent past to support "comprehensive programs of scientific study in this complex and often tantalizing" field of brain research.

Dr. Carmichael told the Borden Centennial Symposium meeting in New York that Russia has an "elaborate and intricately formulated" program of research in the higher nervous functions and in the physiology of behavior. Attention should be paid to the possibility of something called "pharmacological warfare," which might require pharmacological countermeasures.

New scientific knowledge of the brain may be used to help cure or prevent the

scourge of mental illness or to make men betray what they hold dear, Dr. Carmichael pointed out. The symbolism of the electrically recorded physiological reactions radioed back to earth from the first Russian dog in outer space should not be disregarded.

Dr. Carmichael said he had recently examined four large volumes, each about the size of the New York telephone book, containing English translations of Russian studies on the central nervous system and behavior during 1957.

Research on the effects of pharmaceutical products on higher nervous activity and on the behavior of the organism as a whole occurs "over and over again" both in outlines of future programs and in reports of recent experimental results.

Speech in Russia is studied not only by philologists or social scientists but also quantitatively and physiologically. If thinking is related to silent talking, Dr. Carmichael warned, "this study may be a little ominous for a world that has learned to fear forced confessions and standardized intellectual attitudes."

Science News Letter, April 26, 1958

ASTRONOMY

Length of Day Increasing

► THE LENGTH of a day has been increasing about half a thousandth of a second a year since September, 1955, two British and two American scientists report.

They spotted this irregular variation in the earth's rotation rate by comparing the time kept by an atomic clock with the time kept by the earth itself as it turns on its axis. This latter is known as Universal Time.

Atomic clocks are based on the natural frequencies of vibrations of atoms. The atomic clock of the National Physical Laboratory used in this cooperative study uses cesium atoms, and is accurate to one part in ten billion. The Universal Time is based on observations made with the U.S. Naval Observatory's photographic zenith tubes at Washington, D.C., and Richmond, Fla.

The intervals between time signals from radio station WWV in Washington are measured in terms of the cesium atomic clock and Universal Time, then compared.

The scientists also investigated the well-known seasonal variation—a regular change in the length of a day of about a thousandth of a second a year, believed due to winds. They found the seasonal variation as determined by the cesium atomic clock is virtually the same as that determined with quartz crystal clocks for several years prior to 1955.

Drs. L. Essen and J. V. L. Parry of the National Physical Laboratory, Middlesex, England, and Drs. William Markowitz and R. G. Hall of the U.S. Naval Observatory made the comparisons. The work they

report in *Nature* (April 12) is an intermediate step in establishing the frequency of a cesium atomic clock in terms of the second of Ephemeris Time, which is based on the orbital motion of the moon.

There are three kinds of variations in the earth's rotation speed: secular (progressive), irregular and periodic. The first, due to tidal friction, is too small to be significant in their time studies.

Irregular variation refers to departures from the average speed of rotation that continue for about five or ten years. This effect has been suspected but not previously observed in detail. If the speed of rotation decreases, the length of day increases.

Periodic variations in the earth's rotation speed have been found with intervals of one year, one-half year, 27.6 days and 13.6 days. The first two are the seasonal variations. Both these and the shorter periods were removed in computing the changes in the earth's rotation speed.

Science News Letter, April 26, 1958

PHYSIOLOGY

Give Mice "Hotfoot" To Test Tranquilizers

See Front Cover

► SCIENTIFIC "hotfoots" make hotheads of mice.

The electric "hotfoot" is being used as a test for tranquilizing drugs, a team of sci-

tists from Smith, Kline & French Laboratories told the Federation of American Societies for Experimental Biology meeting in Philadelphia.

In operation, a pair of normally tranquil mice are placed on an electrically charged grid surrounded by a large glass beaker that serves as a type of boxing ring. The hotfoot is then administered five times every second.

When first placed in the "ring," the mice jump around to try to avoid the shock. But after a brief period, the mice "converge at close quarters, stand face-to-face on their hind legs, and spar and bite savagely at one another."

To the casual observer, according to the scientists, the mice appear to be blaming each other for their predicament and have decided to hit back.

The photograph on the cover of this week's *SCIENCE NEWS LETTER* shows two normal mice, untranquilized with drugs, sparring like boxers. They are standing on an electrically charged grid.

When given various tranquilizers and other drugs that depress central nervous system activity, the mice still jump but they do not fight.

The "mouse rage" test is being used as part of a battery of animal behavior tests to get a pharmacological profile of a drug before the same compound is tried on humans.

Dr. Ralph E. Tedeschi, Miss Anna M. Mucha and Dr. David H. Tedeschi reported on the shocking-mouse experiment.

Science News Letter, April 26, 1958

NECROLOGY

Lark-Horovitz, Physicist, Dies After Long Illness

► DR. KARL Lark-Horovitz, head of the Purdue University physics department, died April 14 at the age of 65.

A member of the Board of Trustees of *SCIENCE SERVICE* for almost ten years, Dr. Lark-Horovitz was internationally known for his researches on semi-conductors, nuclear physics, X-ray crystal structure, and for his early work on glass.

Science News Letter, April 26, 1958



KARL LARK-HOROVITZ — Internationally known physicist, Dr. Lark-Horovitz, died on April 14.

CHEMISTRY

Pollen Chemical Causing Hay Fever Is Identified

► THE SINGLE chemical agent that causes hay fever has been extracted from ragweed pollen and identified, scientists at the American Chemical Society meeting in San Francisco learned.

Identification and study of the agent responsible for hay fever is expected to make possible more effective relief for the millions of persons who suffer the summertime allergy.

Trifidin A, as the agent is called, was separated from extracts of giant ragweed pollens by Drs. A. K. Bhattacharya and A. R. Goldfarb of the Chicago Medical School.

The substance by itself has proved almost as effective in producing hay fever as the total pollen extract, Dr. Bhattacharya said. It may exist uncombined in the pollen, he reported, or it may be hidden in a complex mixture of other pollen components.

Ragweed pollens are a major cause of hay fever and asthma, which are the most common constitutional allergy symptoms found in the United States. Previous studies of these widespread conditions indicated the presence of several substances which singly, or in combination, can produce the allergies.

Earlier work also showed that the allergy-producing agents could be separated into two categories: those that react with skin and those that do not. This, Dr. Bhattacharya said, confirmed the belief that the agent producing allergy symptoms is a single chemical structure occurring either in the free state or combined with carriers as a complex compound.

Separation of the compound Trifidin A was accomplished by repeated treatments of the pollen extract with solvents, followed by ion exchange and chromatographic refining.

Science News Letter, April 26, 1958

BIOLOGY

Fake Body Chemical Gives Anti-Cancer Hope

► COUNTERFEIT "hearts" of nucleic acid, the material that guides a cell's function and controls its heredity, have been synthesized and may show promise as potential anti-cancer drugs, the Federation of American Societies for Experimental Biology meeting in Philadelphia learned.

The story of how these "hearts" or nucleosides, as they are called, have been made in the laboratory was described by Dr. Jack J. Fox of Sloan-Kettering Institute for Cancer Research, New York.

Transplanted tumors have been fooled into destruction by a "phony" nucleoside in laboratory animals, Dr. Fox told SCIENCE SERVICE.

The synthesizing of the chemically complex nucleoside by the New York scientist and his co-workers is in itself a major scientific advance. For the first time, it permits scientists throughout the world to

make up many of the body's naturally occurring nucleosides simply and cheaply by following a chemical recipe.

Dr. Fox said that the new method of synthesis already has made available the rare nucleoside, 5-methylcytosine deoxyriboside, and has yielded the fraudulent nucleoside, "thio-guanosine."

Thio-guanosine has been effective against a wide variety of experimental tumors, according to other researchers at the Sloan-Kettering Institute. As synthesized, it is a fraudulent nucleoside that differs from its natural counterpart, guanosine, by having had only one of its many atoms changed.

This small change is crucial to applying "phony" nucleosides as a weapon in the fight against cancer. The hope is that by giving an animal a counterfeit nucleoside, it will interfere with cell function. This hope is aimed at influencing malignant cells within the body, but without unduly affecting normal cells.

Dr. Fox's co-workers at Sloan-Kettering included, Dina Van Praag, Iris Wempen, Iris L. Doerr, Loretta Cheong, Joseph E. Knoll, Maxwell L. Eidinoff and Aaron Bendich.

Science News Letter, April 26, 1958

BIOLOGY

Greater Leukemia in Mice at Lower Altitude

► MALES are more susceptible to spontaneous leukemia at low altitudes than at high altitudes, at least in mice.

This was shown in a study made in Peru and reported to the American Association for Cancer Research meeting in Philadelphia by Dr. Pablo Mori-Chavez of the Andean Institute of Biology and Pathology, Lima, Peru.

Two laboratories were used in the South American experiment, Dr. Mori-Chavez said. One was at sea level in Lima and the other was at Morococha, 14,900 feet above sea level. It was undertaken because Peruvian scientists feel the relation of cancer to high altitude has not as yet been adequately investigated under natural and long-term conditions.

At both the laboratories environmental conditions such as temperature, food, humidity and water supply were similar. The variable was altitude.

The results of the controlled study show there was a lower incidence of leukemia at high altitude for male mice. In addition, the spread of the lesions and the size of the lymphomas were much larger at sea level than at high altitude.

An analysis of the age distribution of the spread of the lesions and the size of the leukemia in both groups of mice showed that the age at onset of the disease was somewhat later at high altitude as compared with sea level.

There was no significant difference in the incidence of leukemia in females at both levels.

The males, on the other hand, Dr. Mori-Chavez said, were significantly more affected at sea level than at high altitude.

Science News Letter, April 26, 1958

IN SCIENCE

DERMATOLOGY

Nutrition Finds Little Role in Skin Disorders

► DIET AND ACNE have little to do with one another, Dr. Allan L. Lorincz, assistant professor of dermatology at the University of Chicago, reports in the *Journal of the American Medical Association* (April 12).

Reporting for the A.M.A. Council on Foods and Nutrition, Dr. Lorincz makes the following points:

1. Contrary to popular beliefs, food allergies or nutritional deficiencies play only an insignificant role in the skin eruptions commonly seen in the United States.

2. Overeating that leads to obesity is "by far the most frequently encountered nutritional disturbance that causes or aggravates skin diseases."

3. Although specific dietary restrictions are valuable for some diseases, they do not appear to have much effect on acne vulgaris.

4. Vitamin A has been tried in the treatment of a wide variety of skin diseases with "unquestionable" value in only a few rare disorders.

"From a dermatological point of view," Dr. Lorincz says, "other nutritional factors have mostly only academic interest today; they find little practical application."

Science News Letter, April 26, 1958

FORESTRY

U. S. Forest Service Acts To Protect Bristlecones

► THE BRISTLECONE pine, believed to be the oldest living thing on earth, now occupies protected land, thanks to action taken by the U. S. Forest Service.

Some 27,000 acres of the Inyo National Forest of the White Mountains, California, containing thousands of pine trees older than 3,000 years, have been set aside as the Ancient Bristlecone Pine Forest.

"The Forest Service wants to preserve and protect these rare pine trees for botanical and historical purposes and for the public enjoyment," Dr. Richard E. McArdle, chief of the Service, said. "Their growth rings have recorded the climatic changes of the past, and the forest is a natural laboratory for basic research in longevity, genetics, and other phases of forest biology."

A grove of the oldest trees, 100 are more than 4,000 years old, will be named the Edmund Schulman Memorial Grove in honor of the man who discovered that the ancient bristlecones may be the oldest living things in the world. The late Mr. Schulman and M. E. Cooley of the University of Arizona were studying the trees in 1957 when he discovered their great age.

Science News Letter, April 26, 1958

CE FIELDS

AGRICULTURE

Plant Tranquilizer Available This Season

► FARMERS now have a tranquilizer developed especially for them.

The tranquilizer is for plants and is said to reduce the effects of shock and stress caused by heat spells, sudden cold snaps, too much rain, or too little rain.

The plant quieter is called Duraset-20W by its developers, the United States Rubber Company. Chemically, it is N-Meta-tolyl phthalamic acid.

It works two ways, according to the rubber company scientists: when sprayed during blossom time it helps plants and trees retain fruit-producing blossoms in the face of poor growing conditions; and it can more than double the number of blossoms for some plants.

A wettable powder, the chemical is mixed with water and sprayed onto plants. In field tests, it helped increase the yield of lima beans up to 90%; doubled the amount of fruit formed on cherry trees; and increased yield of cotton plants from 10% to 30%.

The chemical, available for use on selected crops this season, was discovered by Drs. Allen E. Smith, chemist, and Albert W. Feldman, plant pathologist, of the company's Naugatuck chemical division.

Science News Letter, April 26, 1958

CHEMISTRY

High Flying Planes Make Own Fuel

► A SMALL, unmanned airplane that carries no fuel, but will be capable of manufacturing its own fuel from trace quantities of material present at the high altitudes was described to a meeting of the American Chemical Society in San Francisco.

The revolutionary idea is also expected to lead to development of a much larger craft that will continuously circle the earth, gathering and storing nature's own fuel components. These could be used to feed other space craft as they prepare for their flights into farther space after being propelled to the fueling craft's altitude by conventional propellants.

The feasibility of operating such aircraft on small amounts of atomic oxygen present at approximately 60 miles above the earth's surface was described by S. T. Demetriades and Dr. C. B. Kretschmer, Astronautics Laboratory, Aerojet-General Corp., Azusa, Calif., and M. Farber, Hughes Aircraft Co., Culver City, Calif.

Ordinary oxygen exists in a molecular form, with two oxygen atoms combined to form one gaseous oxygen molecule. Probing of the earth's upper atmosphere with high altitude sounding rockets have revealed

the presence there of uncombined oxygen atoms in small quantity.

Considerable energy is released when two oxygen atoms combine. It is this energy that would provide power for the proposed space craft. Enough thrust could be developed from the naturally-occurring fuel elements to overcome the slight drag a ship would encounter at the 60-mile altitude.

The scientists envision a practical application for a ship that could be built in the immediate future. Since the craft would have to be extremely light and have a large surface area, it could be made of thin metal foil and act as a wide-range television reflector or micro-wave relay station.

A first small, unmanned ship also would provide scientific data necessary for building the proposed flying rocket propellant factory.

The larger ship not only would operate on the power of recombined atomic oxygen from its environment, but also would collect and store atomic oxygen.

Science News Letter, April 26, 1958

MEDICINE

Diabetes Identified As Two Distinct Types

► HUMAN BEINGS suffer two distinct types of diabetes.

Diabetes can no longer be considered simply as one disease to be treated with insulin, Dr. Henry Dolger, chief of the diabetes clinic of Mt. Sinai Hospital, New York, told the American Chemical Society meeting in San Francisco.

The new drug Orinase, taken by mouth instead of by injection, has proved to be effective in more than 50% of adult diabetics, and "has thereby created the first separation of diabetes into two categories," Dr. Dolger said.

Many medical researchers have felt the condition of diabetes mellitus, commonly called simply "diabetes," actually represents a number of different kinds of diabetes. However, until now they have had no proof.

Studies using Orinase show, Dr. Dolger said, that persons afflicted with diabetes fall into two groups: 1. those who have no insulin available to begin with, and 2. those who have insulin available but suffer some interference with its proper liberation and use.

Insulin is a hormone secreted by the healthy pancreas. It helps the body convert food into energy. A person suffering diabetes is not able to utilize properly all the available sugar and starch to produce energy. Excess body sugars are passed into the blood and urine.

Injections of insulin help patients suffering both categories of diabetes. Orinase has been helpful in a majority of patients who have insulin available in their bodies but have not been able to utilize it properly.

"This is a most important implication for the future elucidation of the cause of diabetes, and this definition into two groups will afford a better research material and a clearer understanding of the disease," Dr. Dolger declared.

Science News Letter, April 26, 1958

ARCHAEOLOGY

"Mystery of Decapitated Mouse" Unearthed

► IN UNEARTHING some ancient graves in Peru, archaeologists came across a real scientific mystery.

If they were writing fiction, the title of their report would be "The Case of the Decapitated Mouse," the archaeologists Drs. S. K. Lothrop and Joy Mahler comment in a report to the Peabody Museum, Cambridge, Mass.

The body of the mouse was found in one corner of a group of seven small adobe burial chambers. This corner cist contained the bones of an infant in an urn which rested on a layer of interlaced reeds and was surrounded by clean sand. Under the reeds was the mouse without a head.

The head itself was found with remains of two adult bodies in the cist at the opposite corner.

The graves were of the Late Nazca people and were found at Chavina, Peru.

Another peculiar find in the graves was the decapitated body of a man. His head was replaced by a gourd with a turban wrapped around it.

The whole group of burials was unusual, the archaeologists comment, because it represents an individual of importance who was interred with his retainers of both sexes and various ages.

The number of people wealthy and powerful enough to command this form of burial must not have been great, and archaeologists rarely have recorded similar finds.

A radiocarbon date obtained on some textiles found in the graves indicates that they were made about 1,320 years ago, between 576 and 696 A.D.

Cast copper spear-thrower pegs were also found in the graves, indicating that copper and the casting technique was known at that early date.

Science News Letter, April 26, 1958

PSYCHOLOGY

Train the Henpecked To Dominate Others

► THE MOST dominant individual in a group can be trained to be the most submissive and the most henpecked individual can learn to dominate.

At least this reversal of social position can take place in a flock of hens, it was reported to the American Psychological Association meeting in Philadelphia.

Drs. Wendell I. Smith and E. B. Hale of Bucknell University and Pennsylvania State University, respectively, succeeded in completely reversing the "pecking order" of a whole flock of hens.

The training for the new social role was accomplished by giving an electric shock to the originally dominant hen each time she tried to eat in the presence of another hen or threatened, pecked at or attacked her. The originally submissive hen was rewarded in the same situation.

Science News Letter, April 26, 1958

ASTRONOMY

Saturn Joins Jupiter

In May, Jupiter and Saturn will be visible in the evening sky, and Mars, Venus and Mercury in the early morning sky. The year's only eclipse of the moon occurs May 3.

By JAMES STOKLEY

► JUPITER, NOW shining brilliantly in the southern evening sky, is joined by Saturn, the planet with the rings. As soon as it is dark, if you look toward the south, you will see Jupiter in the constellation of Virgo, the virgin. It is just above Spica, although it exceeds the star in brightness about 18 times.

Saturn is farther east, in Ophiuchus, the serpent-bearer, and a little to the left of Antares, the bright, reddish star in Scorpius, the scorpion. The planet is about half again as bright as the star.

The accompanying maps show the appearance of the skies at about 10 p.m., your own kind of standard time (add one hour for daylight saving time) at the first of May, an hour earlier at the middle of the month and two hours earlier at the end. The stars are the background against which the man-made earth satellites can be seen as they flash briefly across the heavens.

Jupiter is shown on the map of the southern sky, but Saturn does not quite make it. Part of Ophiuchus is shown along with Antares, but Saturn is below the horizon. At the beginning of May it rises about three and one-half hours after sunset. By the end of the month it appears only about an hour after the sun has gone down, before twilight has faded, in fact.

Arcturus: Conspicuous Star

About the most conspicuous star to be seen on May evenings is Arcturus in Bootes, the bear-driver, which is just about the eastern end of Virgo. Another bright one is Vega, in Lyra, the lyre, which is to the northeast. Just below this group is Cygnus, the swan, with Deneb. Although this star is classed in the first magnitude, it appears a good deal fainter. It is so low in the sky that its light is absorbed by the greater thickness of air through which it has to pass.

Antares, in Scorpius, also appears fainter than it should, for the same reason.

To the right of Virgo, and now in its best position of the year, stands Leo, the lion. This really is in two parts. To the right is a group of stars, not an official constellation, called the "sickle," because of its shape. Regulus, another star of the first magnitude, is at the end of the handle, which points downward. As pictured on the old star maps, the blade of the sickle formed the lion's head, Regulus was in his right shoulder, and the star west of Regulus was in his right paw.

To the left is the triangle of stars which depict the animal's hind quarters. The tail is marked by Denebola. Although this star

is of the second magnitude, Denebola is its commonly used name, which is rather unusual.

However, another second magnitude star with a common name is visible in the west. This is Castor, one of the twins, in Gemini. Just alongside is Pollux, his brother, a star of the first magnitude. Auriga, the charioteer, is to the right of Gemini, and in it is first-magnitude Capella. Canis Minor, the lesser dog, is to the left of Gemini, with brilliant Procyon.

In addition to Jupiter and Saturn, some other planets are visible later in the night. Mars rises about 2:30 a.m., at the first of May. Venus follows about an hour later, and shines in the eastern sky more brilliantly than any other star or planet.

On May 14 Mercury is farthest west of the sun, and rises about an hour before sunrise. By this time, however, the sky will be so bright, and the planet so low, that Mercury will be difficult to observe.

The year's only eclipse of the moon, and the only eclipse of either sun or moon visible in the United States, will occur in the early morning hours of May 3. Unfortunately, it will only be visible in the western part of the nation; in the east the moon will have set before the eclipse occurs.

Even along the Pacific Coast, not a great deal will be visible for this is a rather small partial eclipse.

Both earth and moon are illuminated by the sun, and cast shadows behind them. When the moon passes between the earth and sun, and the lunar shadow falls on this planet, there is an eclipse of the sun. Such an event occurred recently, on April 19, but was visible mainly in Asia. When the moon enters the shadow of the earth, and its light is cut off, there is a lunar eclipse and this is what happens on May 3.

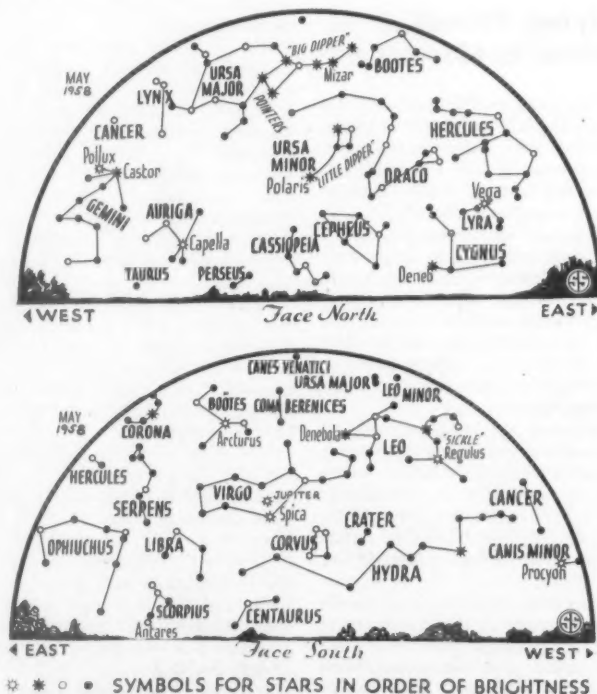
When the moon goes all the way into the terrestrial shadow, the eclipse is total, but this time only the edge of the lunar disc does so. The shadow will cover, at most, only about one and one-half percent of the moon's diameter.

Along the Pacific Coast, the shadow will reach the southern edge of the moon's disc at 4:00 a.m., PST (7:00 a.m., EST) and will leave it at 4:26 a.m. During this period the lower left-hand part of the disc will look a little darker than normal.

But even though only a small part of the country will be able to see the eclipse, we can all see the planet Jupiter which is shining so brilliantly in the southern sky. And when you look at Jupiter you are looking at a powerful radio station.

Celestial Radio Station

In recent years, particularly since the end of World War II, an important branch of



astronomical research has developed—radio astronomy.

The sun, the moon and many other objects in the universe are sending us radio waves. Many radio telescopes have been built to pick up these waves, and provide data for study and interpretation.

If a piece of iron is heated to approximately a thousand degrees Fahrenheit, it begins to show a dull red glow; at 3,000 degrees, it shines a brilliant white. These waves of visible light range in length from approximately 1/40,000th inch, which give the sensation of red, to approximately 1/70,000th inch, which gives violet. Shorter than red are the infrared, given off by objects much too cool to show any visible glow. The longer waves in the infrared run into the shortest radio waves, and these, too, are given off by objects that are relatively cool, even at temperatures no greater than those of our normal surroundings.

Jupiter's Lightning

Such waves in the radio region, an inch or so in length, have been detected from the moon, Mars and Venus, resulting from temperatures in the region of zero to 32 degrees Fahrenheit. Jupiter, however, is much colder, and no radiation of this sort has been detected from that planet.

Nevertheless, in 1955 scientists in Washington did pick up waves from Jupiter, some 45 feet in length. Unlike those due to the temperature, these were variable, coming in bursts, and were also much stronger. Each burst may last for a second or more. The static that we sometimes hear on our radio receivers usually comes from distant lightning flashes here on earth.

One theory to explain the bursts of "static" from Jupiter is that there, too, lightning strokes occur in the clouds of methane and ammonia that fill the planet's skies. But the total power of such a Jovian stroke is about a hundred trillion times as great as the average stroke on earth.

Venus, also, has been found to broadcast somewhat similar signals, but these are much weaker, and shorter, too, lasting only a small fraction of a second. As these waves are studied by the new radio observatories, and others now being built, we will doubtless acquire much new data about the planets, as well as other celestial bodies.

Celestial Time Table for May

May	EST	
2	1:00 a.m.	Moon nearest, distance 223,400 miles.
	4:21 a.m.	Moon passes Jupiter.
3	7:00 a.m.	Partial eclipse of moon begins, visible in region of Pacific Ocean.
	7:23 a.m.	Full moon.
5	early a.m.	Meteors visible, radiating from constellation Aquarius.
6	5:22 a.m.	Moon passes Saturn.
10	9:37 a.m.	Moon in last quarter.
12	9:58 a.m.	Moon passes Mars.
14	6:00 a.m.	Moon farthest, distance 252,000 miles.
	9:00 a.m.	Mercury farthest west of sun.
	7:25 p.m.	Moon passes Venus.
16	9:16 a.m.	Moon passes Mercury.
18	2:00 p.m.	New moon.
25	11:38 p.m.	Moon in first quarter.
29	9:25 a.m.	Moon passes Jupiter.
30	2:00 a.m.	Moon nearest, distance 226,300 miles.

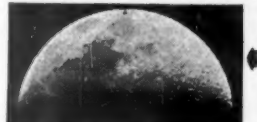
Subtract one hour for CST, two hours for MST and three for PST.

Science News Letter, April 26, 1958

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AIR POLLUTION—M. W. Thring, Ed.—*Butterworth and Co. (Canada)* 248 p., illus., \$8.50. The problem of air pollution arises from the fact that the cost of remedies are not directly borne by those who would benefit. The author says that we either must find much cheaper means of eliminating air pollution or must work out some method of subsidizing.

ALIPHATIC FLUORINE COMPOUNDS—A. M. Lovelace, Douglas A. Rausch and William Postelnek—*Reinhold*, 370 p., \$12.50. A complete and concise collection of these compounds from Moissan's time to the present. From the point of view of preparative organic chemistry.

ANATOMY OF THE CHORDATES—Charles K. Weichert—*McGraw-Hill*, 2d ed., 899 p., illus., \$9.50. Emphasis is on familiar living species.

BASIC ELECTRICAL ENGINEERING—Robert H. Nau—*Ronald*, 437 p., illus., \$7. A text for sophomore electrical engineering students.

BIBLIOGRAPHY AND INDEX OF GEOLOGY EXCLUSIVE OF NORTH AMERICA: Volume 21—Marie Siegrist, Mary C. Grier and others—*Geological Society of America*, 845 p., \$10.

BIRD WONDERS OF AUSTRALIA—Alec H. Chisholm—*Mich. State Univ. Press*, 243 p., illus., \$5. Describing oddities of the bird world such as birds that build playhouses and infant birds that commit murder.

CHEMICAL CALCULATIONS: A Systematic Presentation of the Solution of Type Problems, With 1000 Chemical Problems Arranged Progressively According to Lesson Assignments—Bernard Jaffe—*World Bk.*, 3d ed., 180 p., illus., \$2.20. A supplement to the chemistry textbook intended to overcome the student's shortcomings in mathematics.

CLEAR LANDS AND ICY SEAS: A Voyage to the Eastern Arctic—Theodora C. Stanwell-Fletcher—*Dodd*, 264 p., illus., \$4. A book of adventure.

CLINICAL AND COUNSELING PSYCHOLOGY—John M. Hadley—*Knopf*, 701 p., \$8.95. Telling some problems faced by the clinical psychologist and how he goes about solving them and aiding the individual.

DEEP TREASURE: A Story of Oil—Elizabeth Olds—*Houghton*, illus., \$3. Telling young children the story of oil, how and where it is found and how it was formed.

EARTH, MOON AND PLANETS—Fred L. Whipple—*Grosset*, 2d ed., 219 p., illus., \$2.95. The 17 years that have passed since the publication of the first edition have added knowledge

rather than changing understanding of the solar family.

ELEMENTS OF PSYCHOLOGY—David Krech and Richard S. Crutchfield—*Knopf*, 736 p., illus., \$8.75. A text presenting the science of psychology as an organic whole. The first chapter provides an "overview" of the entire book.

FACTS AND THEORIES OF PSYCHOANALYSIS—Ives Hendrick—*Knopf*, 3d rev. ed., 402 p., \$6. Completely rewritten edition of what is considered a minor classic in the field.

FAT CONSUMPTION AND CORONARY DISEASE: The Evolutionary Answer to This Problem—T. L. Cleave, foreword by Percy Stocks—*Philosophical Lib.*, 40 p., \$2.50. The author believes that the principles of evolution can clarify the confusion over high fat consumption as a cause of coronary disease.

FLORA OF THE BRITISH ISLES: Illustrations, Part 1, Pteridophyta—Papilionaceae—A. R. Clapham, T. G. Tutin and E. F. Warburg—*Cambridge Univ. Press*, 144 p., illus. with beautiful drawings by Sybil J. Roles, \$5. A companion volume to the text by the same authors. The drawings are meant to assist users of the flora to recognize species.

FOURTH TECHNICAL PROGRESS REPORT—W. L. Faith, N. A. Renzetti and L. H. Rogers—*Air Pollution*, 91 p., illus., paper, \$3. The control of automobile exhaust pollution in the Los Angeles basin, it is estimated, will cost between \$150,000,000 and \$250,000,000 annually.

HANDBOOK OF BASIC MICROTÉCHNIQUE—Percy Gray—*McGraw-Hill*, 2d ed., 252 p., illus., \$6. Telling how to use a microscope and prepare slides for viewing with it.

THE IMPACT OF THE ANTIBIOTICS ON MEDICINE AND SOCIETY: Monograph II, Institute of Social and Historical Medicine—Iago Galdston, Ed.—*Int. Univ. Press*, 222 p., graphs, \$5. A socio- and medico-historical inquiry into the advent of the antibiotics.

AN INTRODUCTION TO THE DYNAMICS OF AIRPLANES—H. Norman Abramson—*Ronald*, 225 p., illus., \$4.50. Providing the basic principles and ideas which should be included in the "tool kit" of today's aeronautical engineering graduate.

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THE PSYCHOLOGY OF EARLY CHILDHOOD—Catherine Landreth, foreword by Harold E. Jones—*Knopf*, 431 p., illus., \$8.75. A text for college students planning a professional career in this field.

PSYCHOTHERAPY BY RECIPROCAL INHIBITION—Joseph Wolpe—*Stanford Univ. Press*, 239 p., illus., \$5. Presenting a new theory that neurotic behavior originates in learning and can be unlearned.

PSYCHOTHERAPY OF CHRONIC SCHIZOPHRENIC PATIENTS—Carl Whitaker, Ed.—*Little*, 219 p., \$5. Recounting the exchange of ideas during a "bull session" of psychiatrists and an anthropologist.

SEALS, SEA LIONS AND WALRUSES: A Review of the Pinnipedia—Victor B. Scheffer—*Stanford Univ. Press*, 179 p., illus., \$5. Scientific description of these gregarious "wing-footed" creatures that number perhaps 15,000,000 to 25,000,000 individuals.

SEX WITHOUT GUILT—Albert Ellis—*Lyle Stuart*, 200 p., \$4.95. This book is intended by the author, a clinical psychologist, to relieve the burden of guilt carried by many persons largely on the basis of misinformation or lack of information about the harmfulness of some sex practices.

THE STORY OF ALBERT EINSTEIN: The Scientist Who Searched Out the Secrets of the Universe—Mae Blacker Freeman—*Random House*, 178 p., illus., \$2.95. For children. A biography of the great scientist who was considered slow in school because he could not answer quickly but needed to think long over every word.

THE STORY OF LIFE—H. E. L. Mellersh—*Putnam*, 263 p., illus., \$3.95. The story of evolution from a modern point of view, including growth of intelligence, the sublimation of sex and the blossoming of the emotions.

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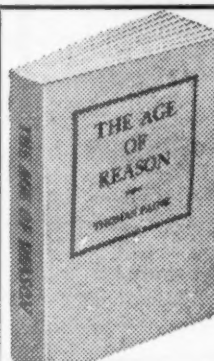
THADDEUS LOWE: America's One-Man Air Corps—Mary Hochling—*Messner*, 189 p., illus., \$2.95. Telling of the beginnings of military flying in the U. S. when a balloon started on active duty during the Civil War.

THEORETICAL ASTROPHYSICS—V. A. Ambartsumyan, Ed., translated from the Russian by J. B. Sykes—*Pergamon*, 645 p., \$22.50. Although theoretical astrophysics is a young science, it is a rapidly developing one in Russia, England and the U. S. The first Russian textbook on the subject appeared in 1939 and was by the editor of this text.

THE UNDISCOVERED SELF—C. G. Jung, translated from the German by R. F. C. Hull—*Little*, 113 p., \$3. Prompted by conversations between Dr. Jung, famous psychiatrist, and Dr. Carleton Smith. Dr. Jung is still living and writing in his native Zurich, Switzerland.

ZINC OXIDE REDISCOVERED—Harvey E. Brown—*New Jersey Zinc Company*, 99 p., illus., \$3. A highly technical work of interest to science teachers and the personnel of research laboratories.

Science News Letter, April 26, 1958



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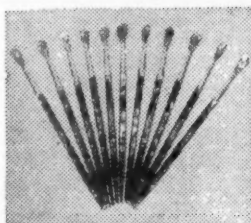
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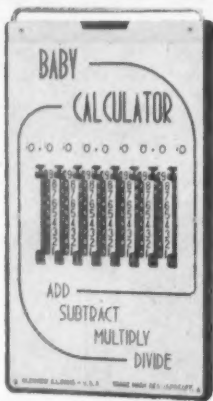
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MEDICINE—Do leukemia patients have a higher or lower concentration of vitamin B-12 than well patients usually have? p. 262.

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PHYSIOLOGY

Pigeons' Breathing Rate Increases in Daylight

► PIGEONS breathe faster and harder in daytime than nighttime, Dr. Stanley Z. Kramer of the department of physiology at the University of Pennsylvania told the Federation of American Societies for Experimental Biology meeting in Philadelphia.

When pigeons are exposed to light after having been kept in the dark, there is a rapid increase in the rate of breathing and in the amount of oxygen consumed. These increases were maintained as long as the light was on, even though the pigeons were inactive.

When the light was turned off, the increases were abruptly reversed.

Dr. Kramer also found that when the brightness of the light was increased, the pigeons' breathing rate increased proportionately. If the cerebral hemispheres are removed, however, the birds no longer respond to the light, giving rise to the suggestion that at least part of the control of this reaction is located in that part of the brain.

Science News Letter, April 26, 1958

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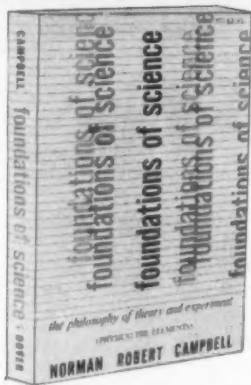
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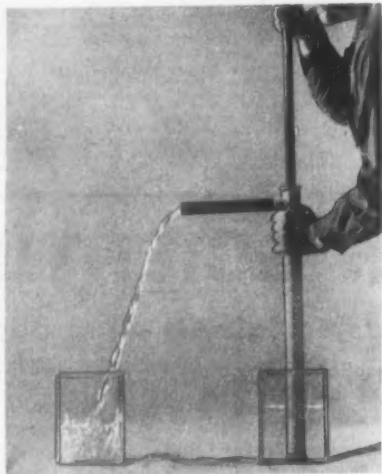
✿ **CARBON PAPER** for accounting systems is a British product. The carbon sheet incorporates two vertical red strips for "in the red" items, so they no longer need be typed in afterwards on individual copies.

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✿ **PICTURE PROJECTOR** for 16 mm sound movies is a two-in-one combination. It has a built-in 18-by-13-inch screen and can be used for both rear projection and conventional use. The projector comes with a 750 watt lamp and has 1,000 watt capacity. It will accommodate 2,000-foot reels.

Science News Letter, April 26, 1958

✿ **BILGE PUMP** for boat owners is made entirely of a polyethylene plastic. Operated manually, the pump, shown in the photograph, is designed to float if accidentally dropped overboard. The salt water and oil-resistant tool pumps 10 gallons a minute.



Normally 24 inches, it can be lengthened to 41 inches with an extension pipe.

Science News Letter, April 26, 1958

✿ **FLIGHT COMPUTER** for aircraft pilots is the size of a silver dollar. Time,

distance and mileage scales are on tarnish-proof, anodized aluminum alloys. The computer can be used in a single-engine, propeller-driven plane or a military jet.

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✿ **WASHING BRUSH** for cleaning the family automobile attaches to the garden hose. The brush is made of soft plastic and described as non-scratching or wax removing. Hollow bristles allow water to flow through the brush in pressurized sprays.

Science News Letter, April 26, 1958

✿ **MOTOR MOWER** is designed to be simply operated by women and children. A British development, the 12-inch motor mower weighs 78 pounds. Raising the handle sets the mower in motion and lowering the handle stops both the machine and the blades.

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✿ **IMPACT HAMMER** has tips machined from a butyrate plastic. The one-piece head and handle are made of a non-ferrous alloy. The threaded replaceable tips are screwed directly to the head. The hammer is available in different weights and tip diameters.

Science News Letter, April 26, 1958



Nature Ramblings



By BENITA TALL

► **POETS MAY** sing of bluebirds, the first robin and the first crocus, and budding trees as the signs of spring. The family doctor knows better.

The surest sign of spring for him is the appearance of his first poison ivy patient.

Home gardeners, picnickers, vacationers, fishing and hunting enthusiasts throughout the nation all face the poison ivy hazard. The weed is Public Enemy No. 1 of the out-of-doors lover.

Some 500,000 to 1,000,000 Americans fall victim to poison ivy, or *Rhus toxicodendron*, each year. Botanists and many non-scientists know the *Rhus* family of vines and shrubs by its characteristic three leaves. All contain a poison called urushiol which can cause

Harbinger of Spring



what scientists describe as a "dermatitis."

This dermatitis—blisters, redness, swelling and itching—can be caused, in sensitive persons, by just coming near the ivy plant, or touching contaminated garden tools, clothing, or even animals. The oily sap,

which also can be spread in smoke, carries the plant toxin to the unsuspecting victim.

Farmers lead the list of victims to poison ivy with about 23 in every 100 persons requiring treatment falling in this occupational group. Construction workers also are high on the list.

Although no region in the United States is free of the weed, the highest incidence of sufferers is in the South. The area from Texas to the eastern seaboard claims 30% of all cases reported. The northeastern states, Pennsylvania to Maine, report 27%, the western states, 24%, and the north central states only 19%.

For the unfortunate person who reacts severely to the merest touch or whiff of poison ivy toxin, the coming of spring may be a sign to "go north central, young man."

Science News Letter, April 26, 1958

